

REMARKS

Claims 1-36 are currently pending in the subject application and are presently under consideration. Claims 1 and 10 have been amended as shown on pp. 1 – 3 of the Reply.

Applicants' representative would like to thank the examiner for the courtesies extended over the telephone on November 9, 2007, and for the examiner's willingness to conduct future discussions to expedite prosecution of the subject application. The below comments present in detail distinctive features of applicants' claimed invention.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments and amendments herein.

I. Rejection of Claims 1-21, 24-28, and 31-36 Under 35 U.S.C. § 101

Claims 1-21, 24-28, and 31-36 stand rejected under 35 U.S.C. § 101. Claims 1, 10, 13, 24, and 31 are independent claims. Reconsideration and withdrawal of the rejection of claims 1-21, 24-28, and 31-36 under 35 U.S.C. § 101 is respectfully requested in view of the comments below.

Regarding rejection of claims 1 and 10, Examiner contends that the claimed subject matter is non-statutory because it amounts to software per se only or lacks enabling hardware, which, it is contended, does not fall within any category of statutory subject matter. However, the Federal Circuit has clearly established in *Eolas Techs., Inc. v. Microsoft Corp.*, 399 F.3d 1325, 1338 (Fed. Cir. 2005) and *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1358. (Fed. Cir. 1999) that inventions such as that claimed by applicants are statutory.

This court must also decide whether software code made in the United States and exported abroad is a "component of a patented invention" under 271(f)... § 271(f) refers to "components of a patented invention."... Title 35, § 101, explains that an invention includes "any new and useful process, machine, manufacture or composition of matter."... Without question, *software code alone qualifies as an invention eligible for patenting under these categories*, at least as processes. *Eolas Techs., Inc. v. Microsoft Corp.*, 399 F.3d 1325, 1338 (Fed. Cir. 2005). (emphasis added).

Applicants' representative respectfully disagrees with the Examiner's contentions and submits that the Examiner is misconstruing the requirements necessary to fulfill the conditions for patentability under 35 U.S.C. § 101. The Federal Circuit in *Eolas Techs., Inc. v. Microsoft Corp.* clearly established that software code alone is statutory subject matter, **at least** as processes. However, the allowance for software code alone as processes in *Eolas* does not limit the otherwise patentable subject matter categories.

For example, independent claims 1 and 10 recite manufactures. Systems, processes, and manufactures are by themselves statutory subject matter. In addition, it should be reasonably understood by one skilled in the art that a manufacture or system referring to components that perform actions (*e.g.*, components that operate across concurrent transactions, and component that tracks a space availability) cannot be implemented by software code alone. Thus independent claims 1 and 10 are inherently directed to computer-related entities capable of performing the recited actions. *See e.g.*, [0025]. For the avoidance of doubt, claims 1 and 10 have been amended to indicate that the database engine is in a computing system. By the standards set forth in the above decision, a manufacture in a computing system, in the form of software, hardware, or the combination of both clearly falls within the categories of statutory subject matter. Reconsideration and withdrawal of the rejection of subject claims based on statutory subject matter is respectfully requested.

Furthermore, the subject claims produce a useful, concrete, and tangible result as described below with regard to independent claims 13, 24, and 31.

Because the claimed process applies the Boolean principle [abstract idea] **to produce a useful, concrete, tangible result** ... on its face the claimed process comfortably falls within the scope of §101. *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1358. (Fed. Cir. 1999) (Emphasis added); *See State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1373, 47 USPQ2d 1596, 1601 (Fed.Cir.1998). The inquiry into patentability requires an examination of the contested claims to see if the claimed subject matter, **as a whole**, is a disembodied mathematical concept representing nothing more than a "law of nature" or an "abstract idea," or if the mathematical concept has been **reduced to**

some practical application rendering it "useful." *AT&T* at 1357 citing *In re Alappat*, 33 F.3d 1526, 31 1544, 31 U.S.P.Q.2D (BNA) 1545, 1557 (Fed. Cir. 1994) (emphasis added).

According to *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999), the standard set forth by the Federal Circuit for determining whether claims are directed towards statutory subject matter is whether the claims *as a whole* can be applied in a practical application to ***produce a useful, concrete and tangible result***. It is the result of the claims as applied in a practical application that is germane to the determination of whether the claims are directed towards statutory subject matter. The subject claims clearly satisfy this legal standard.

Regarding independent claims 13, 24, and 31, Examiner contends the claimed subject matter fails to disclose a complete disclosure that contains some indication of the practical application for the claimed invention. In particular, Examiner points to particular clauses of the claim limitations, in isolation from the remainder of the claim elements, and asserts that these clauses are abstract and do not produce a useful result. Applicants' representative disagrees and submits that the Examiner is misconstruing or misapplying the necessary requirements to fulfill the conditions for patentability under 35 U.S.C. § 101. According to *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352 (Fed. Cir. 1999), the standard set forth by the Federal Circuit for determining whether claims are directed towards statutory subject matter is whether the claims *as a whole* can be applied in a practical application to ***produce a useful, concrete and tangible result***. It is the result of the claims as applied in a practical application that is germane to the determination of whether the claims are directed towards statutory subject matter, not whether the underlying claims (or excerpted portions) recite why the applicant believes the claimed subject matter to be useful. Applicants' representatives respectfully submit that taking one clause of a claim limitation in isolation from the remainder of the claim is an improper basis from which to judge utility of the invention under 35 U.S.C. § 101.

Furthermore, a rejection should not be imposed based on lack of utility, if after review of the claims ***and*** the supporting written description, a person of ordinary skill in the art would immediately appreciate why the invention is useful based on the characteristics of the invention and the utility is specific, substantial, and credible. MPEP

§ 2107 [R-5] II.(A). Alternatively, a rejection should not be imposed based on lack of utility, if after review of the claims *and* the supporting written description, applicant has credibly asserted for the claimed invention any specific and substantial utility (*i.e.*, useful for any particular practical purpose). *Id.* The subject claims additionally satisfy this examination guideline.

In particular, independent claims 1, 10, 13, 24, and 31 (as well as the other dependent and independent claims that recite similar features) recite database engines or methods that operate across concurrent transactions to obtain information on an aggregate size change that occurs on a data page and/or tracking a space availability for the data page over all the concurrent transactions. As a result of the claimed invention, concurrent transactions can operate on various copies of a data page, with each transaction modifying its respective copy of the data page. *See e.g.*, paragraphs [0008] – [0010]. Thus, the claimed invention facilitates active transactions to efficiently keep their respective copies up to date with committed version of that page. In this regard, the framework enables a commit operation to occur with efficiency and simplicity, thus improving multi-user operation and conserving system resources. *Id.* These claims clearly recite an invention that produces a useful, concrete, and tangible result. In addition, applicants’ representative respectfully submits that one skilled in the art would readily appreciate that, based on the aforementioned characteristics, the described utility is specific, substantial, and credible. Alternatively, the indicated paragraphs credibly assert specific and substantial utility of the invention. The rejection of subject claims based on lack of utility should be withdrawn.

Reconsideration and withdrawal of the rejection of independent claims 1, 10, 13, 24, 31 (and associated dependent claims 2 – 9, 11 – 12, 14 – 20, 25 – 28, and 32 – 36) under 35 U.S.C. § 101 is respectfully requested in view of the foregoing comments.

II. Rejection of Claims 1, 24, 31, 33, 34 and 36 Under 35 U.S.C. § 102(b)

Claims 1, 24, 31, 33, 34 and 36 stand rejected under 35 U.S.C. § 102(b) as being anticipated by US Pub No. 2002/0129011 issued to Benoit Julien (hereinafter “Julien”). Claims 1, 24, and 31 are independent claims. Applicants’ representative respectfully

requests withdrawal of this rejection, because Julien does not expressly or inherently describe each and every limitation of applicants' claimed invention.

For a prior art reference to anticipate, 35 U.S.C. § 102 requires that “*each and every element* as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950 (Fed. Cir. 1999) (*quoting Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)) (emphasis added).

The present invention relates to systems and methods in support of database page synchronization. With the invention, modifications of a database may be made by multiple users by facilitating operations of concurrent transactions at a subpage level. For instance, such concurrent transactions can operate on various copies of a data page, with each transaction modifying its respective copy of the data page. Accordingly, the claimed invention facilitates active transactions to efficiently keep their respective copy or copies up to date with the committed version of that page. By assuring space availability for a particular page prior to a commit operation, the framework enables a commit operation to occur with efficiency and simplicity, thus improving multi-user operation and conserving system resources.

In one aspect, the claimed invention teaches a page aggregator operating across a plurality of concurrent transactions to retrieve information on an aggregate size change that occurs on the various copies of a particular page. Such aggregate size change information can facilitate determination of space available for various operations to be performed on that page. In a client/server request/response model, this aspect operates on the transactions from the client/request side during modifications of a database by multiple users by facilitating operations of concurrent transactions at a subpage level.

In addition, as discussed in Reply to Office Action dated January 18, 2007, applicants' representative respectfully submitted that the term “data page” clearly has meaning to one having ordinary skill in the art. That meaning is referred to in the specification, among other places, at Paragraphs [0005] and [0008]. Accordingly, applicants' representative respectfully submits that one having ordinary skill in the art

would appreciate that databases typically organize active records in physical memory pages, organize pages into "heap files," and keep track of which pages are in memory at any point in time. Applicants' representative submitted therein that use of the term "data page" in the claims or in such a specification passage as "concurrent transactions can operate on various copies of a data page, with each transaction modifying its respective copy of the data page" would lead one having ordinary skill in the art to appreciate that, in this context, "data page" refers to a specific structure that is based, at least in part, on a subset of database data as it is copied into physical memory. *See* paragraph [0008].

In contrast, Julien merely discloses collecting information from several sources of "unstructured" digitized data such as for extracting business-related information from multiple web pages. Notably, Julien contrasts "unstructured" data such as web pages with "structured" data such as databases. *See e.g.*, paragraphs [0005] and [0006]. In particular, Julien defines the term "unstructured" with respect to the information being searched from the point of view of the searcher, wherein the searcher is unaware of any particular layout or structure organizing the information contained in the data. Paragraph [0011]. Sources of unstructured data are considered to be "unstructured" in that they share no common structure or layout for the information contained therein. *Id.* In addition, Julien describes an aggregator unit that combines information extracted from the web pages for output to the requesting user. *See e.g.*, paragraph [0042]. The aggregator unit is described as using rules to correlate and establish relationships between the information elements identified by tags in web pages. *See e.g.*, paragraphs [0043] – [0046].

Regarding independent claims 1, 24, and 31, the claims similarly recite: ***obtain information on an aggregate size change that occurs on a data page***. Page 5, paragraph [0046] is cited for support that Julien discloses this limitation of applicants' claimed invention. At the indicated paragraph, Julien merely describes what is in essence a search distance from a web page tag (*e.g.*, html tag) of interest. For instance, the example aggregation process of Julien implements a metric distance of 50 words before and 100 words after a seed tag, within which other relevant tags can be gathered in relation to the seed tag. In contrast, as described above, the claimed aggregate size change of a data page refers to the aggregation of respective size changes occurring for concurrent

transactions modifying copies of a particular database data page. Thus, specifying a particular search distance from an html tag in the unstructured data of a webpage cannot be said to expressly or inherently describe *obtain[ing] information on an aggregate size change that occurs on a data page*.

In addition, page 7, paragraph [0076] is cited for support that Julien discloses the similarly recited limitation: *the data page being copied by an active transaction that requires a modification thereof*. At the indicated paragraph, Julien merely describes extracting web page information as described above, for the purpose of updating a database containing the type information sought from the web page. In that respect, that Julien extraction and aggregation refers to collecting the information from the unstructured web pages. In contrast, applicants' claimed data page being copied by an active transaction refers to copies of the data base data page (structured data) made when one of a plurality of concurrent transaction requires modification to the data page. As a result, Julien's extracting unstructured web page information cannot be said to expressly or inherently describe *the data page being copied by an active transaction that requires a modification thereof*.

Moreover, regarding claim 1, page 3, paragraph [0021] is cited for support that Julien discloses the limitation: *a page aggregator component that operates across concurrent transactions*. However, this excerpted clause refers to operating across concurrent transactions to obtain information on an aggregate size change that occurs on a database data page as described above. At the indicated paragraph, Julien describes the aggregator unit processing the information extracted from the unstructured data (e.g., web page elements) for generating an output containing extracted and aggregated information. Thus, the Julien aggregating web page data process cannot be said to explicitly or implicitly describe *a page aggregator component that operates across concurrent transactions* to obtain information on an aggregate size change that occurs on a database data page.

Reconsideration and withdrawal of the rejections of independent claims 1, 24, and 31 (and associated dependent claims 33, 34, and 36) under 35 U.S.C. § 102(b) is respectfully requested in view of the comments above.

III. Rejection of Claims 2, 8, 9, 10, 13-16, 21-23, 25, 29, 30, 32 and 35 Under 35 U.S.C. § 103(a)

Claims 2, 8, 9, 10, 13-16, 21-23, 25, 29, 30, 32 and 35 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Julien in view of US Patent No. 6,643,753 issued to Avner *et al.*, (hereinafter “Avner”). Claims 10, 13, 22, and 29 are independent claims. Reconsideration and withdrawal of the rejection is respectfully requested, at least because Julien alone, or in combination with Avner, does not teach or suggest each and every limitation of applicants’ claimed invention.

To reject claims in an application under § 103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some apparent reason to combine the known elements in the fashion claimed by the patent at issue (e.g., in the references themselves, interrelated teachings of multiple patents, the effects of demands known to the design community or present in the marketplace, or in the knowledge generally available to one of ordinary skill in the art. To facilitate review, this analysis should be made explicit. Second, there must be a reasonable expectation of success. **Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.** See MPEP § 706.02(j). See also *KSR Int’l Co. v. Teleflex, Inc.*, 550 U. S. ___, 04-1350, slip op. at 14 (2007). The reasonable expectation of success must be found in the prior art and not based on applicant’s disclosure. See *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991) (emphasis added).

Regarding independent claims 10, 13, 22, and 29, applicants’ representative respectfully submits that the virtual memory management of Avner does not cure the above-identified deficiencies of the root reference, Julien.

In addition, regarding independent claim 10, Examiner concedes that Julien fails to disclose a heap manager that tracks a space availability, but contends that Avner provides such teaching at column 11, lines 2-8. Applicants’ representative respectfully disagrees with such contention. Avner does not teach or suggest **a heap manager that**

tracks a space availability for the data page via information supplied by the page aggregator as recited in claim 10. Referring to FIG. 1, the database engine 100 can also incorporate a heap manager 120. Paragraph [0026]. Space consumed on a database data page, as well as the space available on a data page can be determined and supplied to heap manager 120. *Id.* The heap manager 120 can then track availability of space on the data page, and determine whether sufficient space is available to perform some part of or all of a transaction. *Id.* Applicants' representative respectfully submits that one having ordinary skill in the art would appreciate that databases typically organize active records in physical memory pages, organize pages into "heap files," and keep track of which pages are in memory at any point in time. In addition, database memory management is primarily concerned with database data integrity and speed, among other things. Paragraph [0005].

Whereas applicants' "heap manager" is directed to facilitating operations of concurrent transactions in support of database page synchronization, Avner merely discloses a "heap manager" directed to a virtual memory management scheme. Avner col. 9, ll. 6 – 9. Virtual memory is a way of simulating more memory than actually exists in system memory. *See* col. 8, ll. 1 – 8. When physical memory is full, the virtual memory manager transfers or "pages" some of the memory contents to disk. *See* col. 1, ll. 39 – 41. When a virtual memory address that has been paged to disk is accessed, the virtual memory manager loads the corresponding information from the disk back into the physical memory. *Id.* The heap manager allocates large portions or "heaps" of contiguous virtual memory addresses that are to be used by threads during execution. *See* col. 9, ll. 6 – 10. The virtual memory manager's major concern aside from running out of address space is fragmentation of the virtual memory space. *See* col. 9, ll. 27 – 30. Thus, the Avner heap manager that operates to manage virtual memory address space, Avner cannot be said to teach or suggest *a heap manager that tracks a space availability for the data page via information supplied by the page aggregator*. Reconsideration and withdrawal of the rejection of claim 10 under 35 U.S.C. § 103(a) is respectfully requested in view of the comments above.

Regarding independent claims 13, 22, and 29, Examiner concedes that Julien fails to disclose *tracking* or *determining space availability for the data page*, but contends

that Avner provides such teaching at column 11, lines 2-8. Applicants' representative respectfully disagrees with such contention. For the reasons described above regarding claim 10, Avner cannot be said to teach or suggest *tracking* or *determining space availability for the data page*. Reconsideration and withdrawal of the rejection of claim 10 (and associated dependent claims 11 – 12) under 35 U.S.C. § 103(a) is respectfully requested in view of the comments above.

Regarding the asserted motivation to combine the references of Julien and Avner, applicants' representative notes that the particular problems to be solved are not the same for the cited references, in addition to differing from that of the applicants' invention. For example, Julien relates to searching, collecting, and aggregating information from unstructured data sources (*e.g.*, web pages) and Avner relates to virtual memory management schemes. In contrast, applicants' invention relates to database page synchronization in the context of concurrent transactions. As a result, applicants' representative submits that the cited references are not in the same field of endeavor as each other or that of applicants' invention. In addition, Avner and Julien are not even reasonably pertinent to the problems addressed by applicants' invention. Thus, applicants' representative respectfully submits that such references from disparate fields of endeavor and addressing unrelated problems cannot properly provide a motivation to combine in an obviousness rejection of applicants' claimed invention. While Examiner cites concerns generally facing Avner as motivations to combine with Julien, such virtual memory fragmentation or efficiency is not pertinent to the database page synchronization problems of applicants' invention, and may be at best only peripherally related to Julien's searching and collecting information from unstructured sources. Reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) on the basis of Julien in view of Avner is respectfully requested in view of the comments above.

IV. Rejection of Claims 3-7, 11, 12, 17-20 and 26-28 Under 35 U.S.C. § 103(a)

Claims 3-7, 11, 12, 17-20 and 26-28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Julien, in view of Avner, and further in view of US Patent No. 6,889,249 issued to Miloushev *et al.* (hereinafter "Miloushev"). Reconsideration and

withdrawal of the rejection is respectfully requested, at least because Julien alone, or in combination with Avner, or further in combination with Miloushev does not teach or suggest each and every limitation of applicants' claimed invention.

Regarding the subject claims, these claims depend directly or indirectly from independent claims 1, 10, 13, 22, 24, 29, and 31. For the reasons described in Reply to Official Action dated January 18, 2007, Miloushev cannot be said to cure the deficiencies of the root references Julien or Avner. Examiner notes in remarks that such arguments are mooted in view of the grounds for the new rejection. However, applicants' representative hereby reiterates and incorporates by reference such arguments as they apply to the inability of Miloushev to cure the aforementioned deficiencies.

In addition, applicants' representative respectfully submits that Miloushev is in a further disparate field of endeavor (distributed file systems), providing solutions to substantially different problems not reasonably pertinent to applicants' invention. Accordingly, Miloushev cannot properly provide a motivation to combine in an obviousness rejection of applicants' claimed invention. Examiner contends an individual ordinarily skilled in a generalized data processing art would seek to combine the cited references. Applicants' representative disagrees and respectfully submits that such a combination of skills in internet search and data collection (Julien), virtual memory management design (Avner), and distributed file system design (Miloushev) to arrive at database page synchronization methods of applicants' suggests improper hindsight bias or an impermissible tendency to read into the prior art the teachings of applicants' invention. For the foregoing reasons and the reason that claims 3-7, 11, 12, 17-20 and 26-28 depend directly or indirectly from independent claims 1, 10, 13, 22, 24, 29, and 31, reconsideration and withdrawal of the rejection under 35 U.S.C. § 103(a) is respectfully requested.

CONCLUSION

The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number below.

Respectfully submitted,

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